REMARKS

The Applicants request reconsideration of the rejection.

Claims 1, 2 and 22-25 remain pending.

The Examiner objected to the specification as failing to provide proper antecedent basis for "a computer-readable medium" in claims 22 and 25. In accordance with the specification language of "a recording medium" respecting a recording medium that is readable by a computer, these claims have been amended to recite a computer-readable recording medium, to permit clear compliance with established U.S. patent practice for claiming a data processing program embodied in a recording medium executable by a computer. If the Examiner objects to the expression "computer-readable", the Applicants agree to delete this understood term.

The Applicants have carefully reviewed the Examiner's Response to Arguments set forth on pages 2-8 of the Office Action, and appreciate the care with which the Examiner has reviewed the arguments and responded to them. While the Applicants continue to disagree with the Examiner's position concerning the disclosures of the applied references, at this time the Applicants have opted to amend the claims to make the invention more clear, and respond to the Examiner's Response only to note that the "taking databases offline and online" mentioned on page 3, last paragraph of the Office Action is an argument distinguishing the prior art, and not a reference to claim language. The claimed language argued in that regard is the switching of the program access allowance from the second database to the first database; Marshall taking the old database offline and putting the new database online is a feature of the prior art that is distinguished by the present

claims. The Applicants do not unduly import limitations from the specification into the claims by this argument.

Turning to the rejections, claims 1-2 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Maurer III, U.S. Patent Publication No. 2003/0065780 (Maurer) in view of Marshall, U.S. Patent Publication No. 2003/0135478 (Marshall) in view of Yanai et al., U.S. Patent No. 5,742,792 (Yanai). Each of these claims is an independent claim; claim 1 is a method claim, claim 2 is a device claim, and claim 3 is a medium claim. All three will be distinguished below according to common limitations therein.

In general, the invention defined in these independent claims relates to a data processing method, a data processing device or a recording medium in which access by a program is switched from access to a first database to access to a second database, wherein the processing history of the program to the second database is stored for later updating of the first database. After switching the program access allowance from the first database to the second database, the first database is reorganized in parallel with access of the program to the second database. Upon completion of the reorganization of the first database, the first database is updated based on the stored processing history, and upon completion of the updating of the first database, the program access allowance is switched back from the second database to the first database.

The primary reference to Maurer performs mirroring of volumes in a logical unit and switches the volume to be accessed by the client by splitting one of the volumes. In particular, the first logical unit may be in a storage system and the second logical unit in a separate tape library system, as is conventional for mirrored

backup. The first logical unit and the second logical unit are thus in different devices. During restoration from backup, the mirrored data is restored from the second logical unit to the first logical unit by logical volume or unit swapping, and the client access is then directed back to the restored first logical unit.

Thus, according to Maurer, the second logical unit is a mirror of the first logical unit, and the first and second logical units store the same contents in different systems. Indeed, when splitting the mirrored data, the application program having access to the data is shut down according to Maurer to maintain consistency of the application data. See Fig. 10.

One distinction between the claimed invention and Maurer, then, is that the present invention does not shut down the first database in order to perform the copying of its contents to the second database. To emphasize this feature of the invention, each of the independent claims has been amended to require that the copying of data from the first database to the second database is performed while allowing access to the first database by a program during the copying, such that the second database is a duplicate of the first database as a result of the copying. Further, the claims have been amended to recite that the processing history is stored on a storage system in which the first database and the second database are also stored.

Again according to Maurer, when restoring from backup, data updating does not continue in the second logical unit (the backup unit) because Maurer does not have any process for reflecting a data update during restoration to the first logical unit (the primary volume). Thus, at the point of restoration, the contents of the

second logical unit are the same as the contents of the first logical unit, due to the mirroring.

In contrast, the present invention switches the program access allowance from the first database to the second database in order to perform reorganization of the first database while access is made to the second database. As a result, when the reorganization is completed, the first database and the second database are different in physical contents from each other. The independent claims have been further amended to reflect this distinguishing feature, and now recite that as a result of an input designating reorganization of the first database, a program access allowance is switched from the first database to the second database so that the program is allowed access to the second database in place of the access to the first database. Further, after switching the program access allowance, the reorganization of the first database is executed in parallel with the accessing of the program to the second database, and upon completion of the reorganization of the first database, the first database is updated based on the processing history of the program to the second database which is stored during the reorganization. Then, upon completion of the updating of the first database based on the stored processing history, the program access allowance is switched from the second database to the first database so that the program is again allowed access to the first database in place of the access to the second database.

The secondary reference to Marshall appears to describe reorganization of a database wherein updates can occur during reorganization, but one difference in Marshall is that Marshall stores data from the old database being reorganized to the shadow database and places the shadow database online, while continuing to

access the old database during the reorganization. Updates to the old database during the reorganization are stored until later "replay" to the shadow database. Thus, after applying these updates to the shadow database, the shadow database is made online.

In contrast, according to the preset invention, program access allowance is switched from the first database to the second database, and during the reorganization of the first database, program access allowance is only to the second database in place of the first database. Then, after completing the reorganization of the first database, the updates that were made to the second database are applied to the first database and the online database is switched from the second database to the first database. During the reorganization, access by the application is only directed to the second database in place of the first database. Thus, the access destination is distributed in the present invention, speeding up both the reorganization process and the application program, in contrast to Marshall.

Combining the teachings of Marshall with those of Maurer is perhaps unpredictable. Maurer, as noted, is directed to a backup-and-restore scheme using mirrored volumes, while Marshall is redirected to reorganizing rather than restoring. However, it is not seen how any combination of Maurer and Marshall would overcome the distinctions noted above.

The secondary reference to Yanai does not provide teachings from those of Maurer and Marshall, and thus even in combination with Maurer and Marshall, Yanai is not seen to render obvious the claimed invention. In particular, Yanai generates a volume copy in a system according to remote mirroring, and thereby switches the access volume when any fault occurs. Like Maurer, Yanai also shows that recovery

is made using the remote mirrored volume. Therefore, the considerations of Maurer and Yanai are similar, and are contrasted with the present invention in a similar way as argued above. Of course, Yanai does not show database reorganization during online operation, and thus the deficiencies of Marshall are not met by Yanai. Accordingly, no combination of Maurer, Marshall, and Yanai can be said to render obvious the invention claimed in the independent claims.

Claims 23-25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Maurer in view of Marshall, Yanai, and Janssen, U.S. Patent Publication No. 2003/0163510 (Janssen). Although amendments have been made to claims 23-25 to reflect changes made to the independent claims, Janssen does not supply the teachings missing from the independent claims, and thus no amendment is required to distinguish Janssen. The Applicants again note that Janssen does not show the efficient switching and access of the present invention, and thus no motivated combination of the four references can be said to teach the invention claimed in the rejected claims.

In view of the foregoing amendments and remarks, the Applicants request reconsideration of the rejection and allowance of the claims.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the

deposit account of Mattingly, Stanger, Malur & Brundidge, P.C., Deposit Account No. 50-1417 (referencing attorney docket no. 500.43519X00).

Respectfully submitted,

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